

CLAIMS:

1. A method for chemical fabricating or altering a submicrostructure on an object, comprising:
 - (a) providing a heating means proximate to a local region of the object; and
 - (b) selectively heating the local region using the heating means to facilitate in the local region a local chemical reaction for forming or altering a submicrostructure on the local region.
2. The method of claim 1, wherein the local region is provided with reactants for the chemical reaction.
3. The method of claim 2, wherein the reactants are provided in at least one of a liquid phase and a gaseous phase, where the liquid phase comprises at least one of a thin layer form and a droplet form.
4. The method of claim 1, wherein the chemical reaction effects at least one of etching, depositing, and removing material from the object.
5. The method of claim 1, wherein the heating means is adapted to a first end of a cantilever, wherein said cantilever has a second end coupled to a device for positioning the heating means.
6. The method of claim 1, wherein the heating means comprises at least one of a nanoheater and a thermal transducer.
7. The method of claim 6, wherein a heat-emitting surface of the thermal transducer has topographic dimensions in a range of about 10 to 200 nm.
8. The method of claim 1, wherein a heat-conductive medium is provided between the heating means and the local region.

9. The method of claim 8, wherein the heat-conductive medium comprises at least one of a lubricant and a reactant.
10. The method of claim 1, wherein the submicrostructure is a defect-eliminating feature formed or altered on a portion of a lithographic reticle or mask.
11. The method of claim 10, wherein the chemical reaction performs at least one of etching a film in an opaque region, depositing a film in an opaque region, etching a film in a transparent region, and depositing a film in the transparent region.
12. The method of claim 1, wherein the submicrostructure is a portion of an integrated circuit.
13. The method of claim 12, wherein the portion is at least one of a line, a conductive via, a contact pad, and a dielectric pad.
14. The method of claim 1, wherein the submicrostructure is a portion of a field effect transistor.
15. The method of claim 14, wherein the chemical reaction is at least one of reactions forming a channel region, forming source and drain regions, forming a gate dielectric, and forming a gate electrode.
16. The method of claim 1, wherein the submicrostructure is an information-containing portion of a recording medium.
17. The method of claim 16, wherein the recording medium comprises at least one of digital video disks (DVD) and compact recording (CD-ROM) disks.

18. An apparatus for chemical fabricating or altering a submicrostructure on an object, comprising:

a means for heating a local region on the object; and

a controller for positioning the heating means proximate to said local region of the object where the submicrostructure is formed or altered using a local chemical reaction facilitated by the heating means.

19. The apparatus of claim 18, wherein the local region is provided with reactants for the chemical reaction.

20. The apparatus of claim 19, wherein the reactants are provided in at least one of a liquid phase, solid phase and a gaseous phase, where the liquid phase comprising at least one of a thin layer form and a droplet form.

21. The apparatus of claim 18, wherein the chemical reaction effects at least one of etching, depositing, and removing material from the object.

22. The apparatus of claim 18, wherein the heating means is adapted to a first end of a cantilever, where said cantilever has a second end coupled to a device for positioning the heating means.

23. The apparatus of claim 18, wherein the heating means comprises at least one of a nanoheater and a thermal transducer.

24. The apparatus of claim 23, wherein a heat-emitting surface of the thermal transducer has topographic dimensions in a range of about 10 to 200 nm.

25. The apparatus of claim 18, wherein a heat-conductive medium is provided between said heating means and said local region.

26. The apparatus of claim 25, wherein the heat-conductive medium comprises at least one of a lubricant and a reactant.

27. The apparatus of claim 18, wherein the submicrostructure is a defect-eliminating feature formed or altered on a portion of a lithographic reticle or mask.

28. The apparatus of claim 27, wherein the chemical reaction performs at least one of etching a film in an opaque region, depositing a film in an opaque region, etching a film in a transparent region, and depositing a film in said transparent region.

29. The apparatus of claim 18, wherein the submicrostructure is a portion of an integrated circuit.

30. The apparatus of claim 29, wherein the portion is at least one of a line, a conductive via, a contact pad, and a dielectric pad.

31. The apparatus of claim 18, wherein the submicrostructure is a portion of a field effect transistor.

32. The apparatus of claim 31, wherein the chemical reaction is at least one of reactions forming a channel region, forming source and drain regions, forming a gate dielectric, and forming a gate electrode.

33. The apparatus of claim 18, wherein the submicrostructure is an information-containing portion of a recording medium.

34. The apparatus of claim 33, wherein the recording medium comprises at least one of digital video discs (DVD) and compact recording (CD-ROM) disks.